Journal of the Association for Information Systems

JAIS

Research Article

Effects of Interactivity on Website Involvement and Purchase Intention*

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Abstract

This study aims to understand how website interactivity (active control and reciprocal communication) can impact purchase intention through website involvement and how the impacts are moderated by the type of products featured on websites. In a laboratory experiment, 186 participants were asked to perform purchasing tasks of non-fictional books or greeting cards on websites of varying levels of interactivity. Results indicate that websites with a high level of active control lead to cognitive involvement and, in some instances, affective involvement. Websites with reciprocal communication lead to affective involvement for functional products but not expressive products. Responses from the participants also reveal that an increase in website involvement leads to higher purchase intention. Implications for research and practice are discussed.

Keywords: *Interactivity, Website involvement, Product type, Purchase intention, Ecommerce*

* Viswanath Venkatesh was the accepting senior editor. This article was submitted on May 22, 2008 and went through two revisions.

Volume 11, Issue 1, pp. 34-59, January 2010

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1. Introduction

Websites supporting online sales have gained significant popularity in recent years. Based on U.S. Census Bureau statistics, online retail sales were greater than $130 billion in 2008, with an annual average growth rate of 23.1percent from 2002 to 2007.[1] It is also reported that sales websites are visited by more than 4.5 million, visitors per minute on average.[2] Despite the increasing usage of ecommerce websites as a sales channel, online retailers continue to face low purchase conversion rates (Moe and Fader, 2004). A prime suspect for this problem lies in the usability issues stemming from poor website design (Venkatesh and Agarwal, 2006). Among the various design characteristics, interactivity stands out as a key and distinguished factor that impacts web users' response to a website (Agarwal and Venkatesh, 2002; Jiang and Benbasat, 2007). More specifically, web consumers employ interactivity as a criterion to assess the success and quality of websites (Palmer, 2002; Saeed et al., 2003). The crucial role played by interactivity in the ecommerce realm has motivated both academics and practitioners to enhance their understanding of the interactivity concept and to employ it effectively.

Though the importance of interactivity in website design is well-recognized, attention paid to understanding the impacts of interactivity on web consumers is sparse (Liu and Shrum, 2002). Existing studies that examine the impacts of interactivity (e.g., Teo et al., 2003) have doubtlessly provided good general insights to practitioners but have not attempted to investigate interactivity components separately. Because interactivity is a complicated construct with multiple facets (Liu and Shrum, 2002), it needs to be studied in finer detail, that is, different interactivity types should be investigated separately in order to yield an accurate understanding of their unique effects. As such, academics and practitioners still find significant gaps in understanding the specific aspects of interactivity capable of affecting web consumers and their effects on purchase-related measures. Cognizance of the distinctive impacts of various interactivity facets is essential to the generation of specific design guidelines for ecommerce websites.

To address the gaps in the literature on interactivity, this study aims to (i) identify types of interactivity pertinent to ecommerce and (ii) explicate their impacts on web consumers. An important aspect of interactivity in ecommerce is users' interaction with the technical features of websites. Before consumers commit to online purchases, they interact with websites by navigating through the web pages and filtering through the information to obtain relevant product information. Sales websites that are hard to navigate and do not provide adequate ways of retrieving product information could limit the flexibility that consumers have in controlling product information to be displayed. Despite efforts to enhance the flexibility of users' interaction with technical features, they may still find information provided on the websites to be limited and not helpful at times. To complement users' interaction with technical features, social communication tools may be deployed on websites to facilitate their information gathering process. These communication tools represent yet another significant aspect of interactivity in ecommerce (Qiu and Benbasat, 2005). Currently, live chat is implemented by some online retailers as a website feature that enables consumers to engage in synchronous text chat with sales representatives during their online shopping (for examples, see kswiss.com and store.nike.com). Live chat serves as an additional self-service avenue for consumers to solicit extra information or to submit customized requests and is reported to bring about a 305 percent return on investment over a six-month period (Roggio, 2009).

Thus far, the discussion has described the dual channels of website interactivity in practice that are commonly used by consumers during their online shopping: mechanical interactivity and social interactivity. The former refers to the interaction between user and technology while the latter is defined as the interactivity between people occurring through a medium (Stromer-Galley, 2004). In an attempt to enhance and optimize consumers' shopping experience on websites, this study aims to

[1] Retrieved from www.census.gov/estats.
[2] Figures provided by Akamai, an ecommerce provider serving more than half of the top consumer brands, www.akamai.com.

investigate the effects of mechanical and social interactivity on consumers' involvement with the website. The study of website involvement is crucial as empirical evidence points out that involvement exerts a positive influence on consumers' responses (McMillan et al., 2003). Moreover, consumer involvement is well-recognized for its strong capability to predict purchasing behavior (Fortin and Dholakia, 2005; O'Cass, 2000).

In addition, this study aims to examine the interactions between website interactivity and product type to provide deeper insights into the effects of interactivity. Since product type plays an important role in consumer information processing and search (Chiang and Dholakia, 2003), it can affect the way consumers perceive the effectiveness of interactive website features. Based on the fashion by which product information is evaluated, products can be categorized into functional and expressive types. Specifically under this taxonomy, it is imperative to consider the moderating effect of product type on social interactivity. The motivation to investigate this moderating effect stems from the fact that the difference in evaluation styles for functional and expressive products can potentially influence the need to communicate with online sales persons synchronously, thus affecting the effectiveness of social interactivity. However, mechanical interactivity is only concerned with the flexibility of users' interaction with technical features and is unlikely to have an interaction with product type. Hence, this study seeks to provide an empirical examination of the moderating effect of product type on social interactivity.

This study makes two contributions to the literature by answering questions pertinent to ecommerce researchers and practitioners. First, it enhances extant literature on interactivity by providing a detailed investigation of the effects of specific aspects of website interactivity (i.e., mechanical interaction and social interaction) on consumers' response, an area that has been understudied thus far. This is an important contribution, since findings in prior works on interactivity have yet to converge (Liu and Shrum, 2009). Second, this study generates the much needed design guidelines for incorporating interactivity into ecommerce sites. Guidelines yielded from our findings will enable practitioners to have a clearer understanding about deploying specific interactive features with additional consideration of the type of product online retailers are selling.

2. Literature Review

2.1. Stimulus-Organism-Response Model

Web consumers interact with ecommerce sites via interactive features found on the websites. These website features are crucial components of the online shopping environment that may influence the psychological processes leading to purchase. As such, features of website interactivity are described as stimuli that invoke systematic elaboration on purchase-related information (Ariely, 2000; Liu and Shrum, 2009). Given that website interactivity is an important environmental stimulus for the online buying process, environmental psychology serves as a logical theoretical foundation for studying the influence of interactivity on ecommerce sites (Koufaris et al., 2001). More specifically, several past works have drawn upon the stimulus-organism-response (S-O-R) paradigm as a theoretical framework to view how website features affect web consumers and their behavior (Eroglu et al., 2003; Parboteeah et al., 2009). In addition to its relevance for the present study, the use of the S-O-R framework has other advantages: (i) it provides a parsimonious and theoretically justified way of investigating website interactivity features as environmental stimuli, and (ii) it enables the examination of the role that cognitive and affective reactions to website interactivity play in users' purchase intentions.

The S-O-R model posits that environmental cues act as stimuli that affect an individual's cognitive and affective reactions, which in turn affect behavior (Mehrabian and Russell, 1975). Stimuli may manifest in different formats, such as a product display, the store environment, the availability of a salesperson, etc. (Jacoby, 2002). In the context of online shopping, stimuli pertain to the design features of the sales websites which consumers interact with (Eroglu et al., 2003). The organism refers to the individual's cognitive and emotive systems, including her feelings, cognitive network, schema, and so forth. The response comes in many forms, and reactions can range from conscious

to unconscious and internal (i.e., nonvisible) to external (i.e., detectable) (Jacoby, 2002). Following the S-O-R model, this study operationalizes "stimulus" as website interactive features (i.e., active control and reciprocal communication) and product types, "organism" as cognitive and affective involvement, and "response" as the purchase intention of consumers.

2.2. Website Interactivity

Interactivity is a complex construct (Liu and Shrum, 2002), which lacks a clear definition. Different operationalizations of this construct are likely to be the cause of conflicting and inconclusive research on the effects of interactivity (Liu and Shrum, 2009). For instance, Wu (1999) found interactivity to exert a positive impact on users' attitudes, while Coyle and Thorson (2001) discovered no such effects. To advance our understanding of the impacts of interactivity in ecommerce, a definition that is general yet pertinent to the focal context of ecommerce is needed. For this reason, this study adapts Steuer's (1992) conceptualization, which defines website interactivity as "the extent to which users can participate in modifying the form or content of a website in real time." In making online purchases, consumers engage with two important aspects of website interactivity to obtain relevant information and make a decision, namely mechanical interactivity and social interactivity (Hoffman and Novak, 1996). For a more concrete representation of the dual channels of interactivity, this study employs active control as a manifestation of mechanical interactivity and reciprocal communication as a manifestation of social interactivity.

Active control refers to the ability to choose information and guide an interaction (Lowry et al., 2006), while reciprocal communication refers to the ability to communicate between two or more entities. We chose active control and reciprocal communication as research constructs because of the similarities that exist across different definitions of interactivity offered in literature. Specifically, active control and reciprocal communication are consistently recognized as facets of interactivity. For instance, active control is widely referenced as an interactivity facet in various IS literature including on ecommerce (Jiang and Benbasat, 2007; Lee, 2005), on human-computer interaction (Teo et al., 2003), and on electronic media research (construed as choice in Ha and James, 1998). Similarly, the concept of reciprocal communication is recognized extensively as an interactivity facet (Chen and Yen, 2004; Ha and James, 1998), though authors have used slightly different terms to refer to the same concept. Extant works have employed the terms "reciprocity" (Johnson et al., 2006) and "two-way communication" (Srinivasan et al., 2002) to refer to this facet of interactivity. In addition to their wide recognition as interactivity facets, active control and reciprocal communication have been advocated in past studies for their conceptual importance in depicting interactivity (see Ariely, 2000; Johnson et al., 2006; McMillan and Hwang, 2002; Srinivasan et al., 2002).

Conceptualizing website interactivity with active control and reciprocal communication has immediate practical implications too. As observed by Srinivasan et al. (2002), the most common issues faced by commercial websites are the lack of website control and customer communication. These interactivity-related issues concern the implementation of active control and reciprocal communication features on websites. In examining these two facets, we seek to provide practitioners with insight about how these essential interactivity features affect consumers, allowing practitioners to employ these features more effectively.

The amount of flexibility and liberty the website allows its users to have in controlling the display of product information is the website's degree of active control (Ariely, 2000). As a form of mechanical interactivity, active control is a crucial component that influences users' interactions with technology, which is why it is considered to be a measure of website usability (Venkatesh and Agarwal, 2006).[3] The effects of active control can be explained by a body of existing control-related theories. For instance, information control theory posits that the ability to control information flow increases one's ability to explore and understand the information structure of an information system (Ariely, 2000). Under the flow theory, it is held that a greater sense of control over the web environment facilitates

[3] Having similar definitions, the term "pace" was used in place of active control as a subcategory of website usability in Microsoft's Usability Guidelines.

acute involvement in website navigation (Ghani et al., 1991; Novak et al., 2000). Extant theories generally suggest that active control brings about positive outcomes.

Reciprocal communication manifests on websites as communication tools (e.g., email and live chat) that enable consumers to engage in conversations with online sales representatives. In this fashion, reciprocal communication features are representations of social interactivity. Under the principles of interactivity, communication theorists suggest that reciprocal communication can be understood in two senses (Ramirez and Burgoon, 2001). First, it can be seen as the structural property of the communication medium that "affords" or enables people to engage in interdependent interaction (Burgoon et al., 2002). In this view, the interactivity provided by reciprocal communication can remove barriers or set upper bounds on the medium's capability to facilitate human-human interaction. Second, reciprocal communication can be understood as a dynamic quality by which interactivity is manifested and "experienced" by communicating parties (Burgoon et al., 2002). The second view asserts that perceptions of interaction ease, connection, receptivity, and understanding are activated when interactivity exhibited in reciprocal communication is experienced. Nevertheless, both views share a common outcome: human communication processes vary systematically with the presence (absence) of reciprocal communication (Burgoon et al., 1999).

This research seeks to understand the effects brought about by website interactivity, in particular, active control (high or low) in mechanical interaction and reciprocal communication (present or absent) in social interaction, on consumers' internal processes. Specifically, this study focused on the relationship between website interactivity, website involvement, and intention to purchase from the website.

2.3. Website Involvement

The involvement construct has been widely explored in previous consumer behavior literature (Dahlen et al., 2003; Liu and Shrum, 2002; O'Cass, 2000). Involvement is defined as a person's perceived relevance of an object based on inherent needs, values, and interests (Zaichkowsky, 1985). The concept of involvement is used to study stimulus objects such as products, advertisements, and purchase situations (Zaichkowsky, 1986). Recently, researchers have begun to extend the applicability of the involvement concept to websites (Cho 1999; McMillan et al., 2003). This study defines website involvement as the perceived relevance of the website based on the inherent needs, values, and interests of the consumer. We investigate two aspects of website involvement: cognitive involvement and affective involvement. The concurrent study of cognitive and affective measures of website involvement provides valuable insights on the disparate internal processes of web consumers from two important psychological facets.

Extant studies show that interactions with websites induce cognitive and emotional effects within consumers (Eroglu et al., 2003; Koufaris, 2002). This suggests that involvement with websites has cognitive and affective components. Cognitive involvement is associated with "rational, thinking" and is induced by utilitarian or cognitive motives (Park and Young, 1986). Affective involvement is associated with "emotional, hedonistic" and is derived from value-expressive or affective motives (Park and Young, 1986; Putrevu and Lord, 1994). In consumers' interactions with a website, cognitive involvement is heightened when they are exposed to website cues such as merchandise description/images, the price, terms of sale, delivery and return policies (Eroglu et al., 2003). These cues aid consumers in achieving their shopping goals, that is, their utilitarian motives (Babin et al., 1994). Consumers can also be affectively involved with a website through features such as colors, animation, sound, and peripheral site information (Eroglu et al., 2003). These features enhance the hedonic/experiential value of shopping on the website (Babin et al., 1994; Mathwick et al., 2001).

Zaichkowsky (1986) identified three major antecedent factors to involvement. The first factor is related to the characteristics of the person, the second factor is related to the characteristics of the stimulus, and the third factor is related to the characteristics of the situation. This study focuses on the second factor and examines how the stimuli of website interactivity features can affect consumers' cognitive and affective involvement with the website in a purchasing scenario.

2.4. Product Type

Though there are various taxonomies for classifying products, categorizing products as functional or expressive is highly relevant for this study. Functional and expressive products are related to consumers' cognitive and affective motives, respectively, for buying and consuming them (Dahlen, 2002). As such, the functional/expressive taxonomy is likely to have implications for the communication outcomes between consumers and sales representatives. As such, applying the product classification taxonomy of functional and expressive allows us to see its moderating effects on reciprocal communication in shaping cognitive and affective involvement with the website.

Functional products, such as batteries and household cleaners, are subjected to cognitive motives and are commonly called "think products" (Ratchford, 1987). It is reported that product types influence the way in which consumers seek and process product information (Mittal, 1989; Rossiter and Percy, 1991). Evaluations of functional products are based on their utilitarian, inherent product features and are associated with their perceived usefulness (Arnould et al., 2005). This thinking process is similar to that of problem-solving, through which consumers use rational decision criteria to choose the product that best serves their needs.

In contrast, consumers seldom rely on inherent product features of expressive products in order to make a buying decision. In this case, the decision is subjected to affective motives (Vaughn, 1980). These affective motives may include ego gratification, social acceptance and sensory stimulation (McGuire, 1976; Fennell, 1978). Hence, expressive products are also known as "feel products" (Ratchford, 1987). Consumers grant little cognitive activity to them since such products are not often subject to content or feature discrimination (Mittal, 1989). Examples of expressive products include greeting cards, jewelry, and fashion apparel.

3. Research Model and Hypotheses

3.1. Research Model

The research model depicted in figure 1 shows how aspects of website interactivity type (level of active control and reciprocal communication) can cause different types of website involvement (cognitive involvement and affective involvement), which lead to purchase intention. This model also posits the moderating effects of product type (functional or expressive) on website involvement.

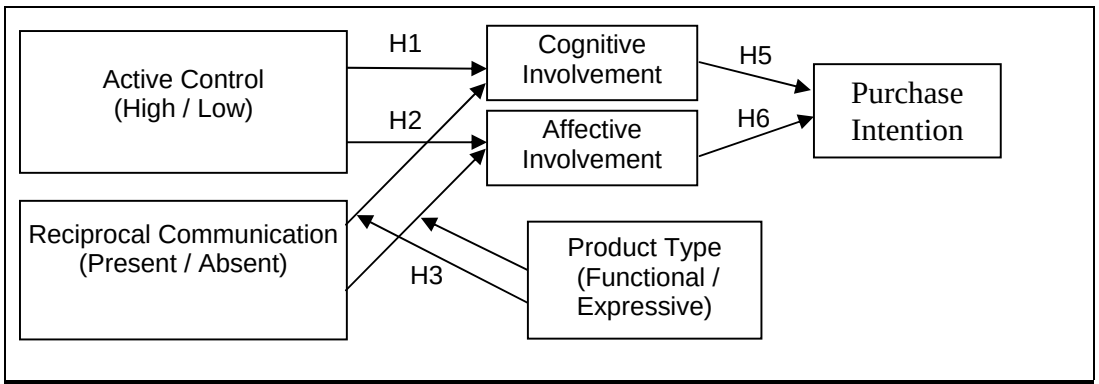

Figure 1: Research Model

3.2. Hypothesis Development

Websites present consumers with information on which they base their purchase decisions. The task facing marketers is to present consumers with information that is appropriate and relevant for their specific needs (Ariely, 2000). However, marketers do not always know their consumers and the type of information they seek. Active control allows consumers to be appropriately selective for their own information needs, hence, maximizing the fit between consumers' heterogeneous and dynamic needs

for information and the information available in the website (Ariely, 2000). High active control empowers consumers with the ability to customize their information by filtering out what is irrelevant, enabling consumers to be more absorbed in their interactions with the website. This further allows consumers to be acutely involved in the cognitive processing of information. In addition, dynamic heterogeneity within consumers (Ariely, 2000) means that consumers will change their search strategies from time to time in order to meet changing needs or to respond to results of prior actions. As consumers perform a series of logical and intense processing steps, higher levels of cognitive involvement are experienced. Hence, we posit:

H1: Active control will positively influence cognitive involvement.

Ariely (2000) demonstrates that active control over the exchange of information can lead to increased pleasure. In the context of online shopping, websites with high active control appeal to consumers by allowing them to act in a variety of unrestricted ways during their shopping experience. Active control triggers the flow experience, which is described as intrinsically enjoyable (Novak et al., 2000). The enjoyment that consumers get is attributed to the gain in their self-efficacy resulting from greater efficiency in gathering product information. As a result, consumers develop higher affinity toward the website, resulting in higher affective involvement. In other words, active control promotes self-gratification by creating a less taxing process of gathering information, which leads to increased pleasure and affinity. Hence, we propose:

H2: Active control will positively influence affective involvement.

In a social interaction context, reciprocal communication occurs when consumers make use of the website to engage in social communication with sales representatives. Interactivity then becomes a characteristic of this computer-mediated communication (CMC) setting that affects cognitive and affective involvement via different information gathering methods. The theory of uses and gratifications can be applied in investigating this context, as it is concerned with why people engage in this form of communication and what benefits they derive from it (Fortin and Dholakia 2005).

It is likely that the product type and the information about it solicited by consumers in making a purchase decision can affect the way that reciprocal communication influences cognitive involvement. When purchasing functional products, consumers seek out relevant product information extensively (Dahlen et al., 2003). Consumers engaged in reciprocal communication with sales representatives can effectively obtain information pertaining to their decision making process. Under the principles of interactivity (Burgoon et al., 2002), reciprocal communication serves as the structural affordance of the website, which provides consumers with interaction opportunities to seek objective information about the functional product. Conveyance of information through this CMC setting allows consumers to seek clarification faster to make better decisions (Dennis et al., 2008). When consumers are constantly engaged with sales representatives in this way, they exert cognitive effort to formulate their questions and understand the information related to the functional product. Hence, it is likely that reciprocal communication plays an important role in stimulating the cognitive involvement of consumers seeking functional products at a website.

In contrast, expressive products are evaluated primarily based on consumers' heterogeneous affective needs and preferences. Therefore, the need to seek objective information in purchasing an expressive product is lower (Dahlen et al., 2003). Hence, consumers are less concerned about the ability to obtain information effectively at the website. Accordingly, consumers deem the website's structural affordance in the form of reciprocal communication as redundant and may rely less on reciprocal communication to seek and clarify product information with sales representatives. Compared to functional products, reciprocal communication does not improve consumers' cognitive involvement substantially when expressive products are involved. Hence, we propose:

H3: There will be an interaction effect between product type and reciprocal communication on cognitive involvement, i.e., the positive effect of reciprocal communication will be stronger when it is used on websites that feature functional products compared to those that feature expressive products.

Liu and Shrum (2002) suggested that reciprocal communication is positively related to consumer

satisfaction. This suggests that a reciprocal communication mechanism has the ability to solicit affective outcomes in consumers. However, the effect of reciprocal communication on affective involvement may be very different when product type is considered.

Consumers looking for functional products have two prominent features: (i) they are focused on obtaining relevant objective information, and (ii) they form opinions of the evaluated products promptly (Dahlen et al., 2003). As a result of these two characteristics, consumers tend to have brief and "to-the-point" conversations with sales representatives when they are shopping for functional products. Though a synchronous reciprocal communication mechanism can please consumers because it is an efficient way to gain product information, the nature and length of the conversations makes high levels of consumer affective involvement unlikely. This is because conversations on functional products revolve mainly on concrete objective product attributes, which are less likely to stimulate warm and affective feelings, especially within a short time frame. According to the principles of interactivity, this can be understood as reciprocal communication that is not able to induce the experience of connection in consumers. Hence, reciprocal communication is less effective in spurring high affective involvement when functional products are involved.

On the contrary, when consumers evaluate affective products, they do so based on motives such as ego gratification and social acceptance (Rossiter and Percy, 1991). Ego gratification refers to the need to enhance and express one's basic personality, while social acceptance is the need to be viewed favorably in the eyes of others (Vaughn, 1980). With ego gratification and social acceptance motives, consumers interested in affective products are likely to discuss feelings and emotions about the product with sales representatives. A synchronous reciprocal communication mechanism facilitates the exchange of affective information between the consumer and sale representative and enables the consumer to experience connection and receptivity with him/her. Therefore, consumers who are interested in expressive products are likely to have a higher level of affective involvement with such features. Therefore, we posit:

> *H4: There will be an interaction effect between product type and reciprocal communication on affective involvement, i.e., the positive effect of reciprocal communication will be stronger when it is used on websites that feature expressive products compared to those that feature functional products.*

Studies have shown that involvement with a website is positively related to attitudes toward the website (McMillan et al., 2003), which in turn influences consumers' intention to purchase at the website. In an effort to gain detailed insight into web consumers' mental processes, this study examines the finer components of website involvement that influence purchase intentions.

Vakratsas and Ambler (1999) asserted that advertising must have some mental effects, such as cognitive involvement, before it could affect behavior. In their model, conative responses (such as purchase intention) represent the consequences of these mental effects. This suggests that associations between cognitive involvement and purchase intention exist in the persuasion model of advertising. Extant studies further demonstrate that consumers' cognitive states have an impact on shopping outcomes (Eroglu et al., 2003). Consumers are motivated to acquire information that is relevant to their purchasing decisions. High cognitive involvement suggests that consumers are actively processing product information on the website and are engaged in information gathering (Schlosser, 2003). Conversely, the lack of cognitive involvement hints that consumers are unable to derive valuable product information from a website, which is likely to dampen the desire to purchase products from that website. As such, high cognitive involvement is likely to lead to favorable conative responses, including purchase intention. Hence, we posit:

> *H5: Cognitive involvement will positively influence purchase intention.*

Affective involvement refers to the heightened emotional feelings associated with a website and is made up of feeling states. These feeling states are present in every shopping encounter (Park et al., 2005) and are likely to influence the shopping outcomes of satisfaction and intention to return (Eroglu et al., 2003; Koufaris, 2002). Positive feeling states include "happy" and "satisfied" (Park et al., 2005) and may lead to increased time spent in the store, increased spending, and higher affinity for the

store (Babin et al., 1994), which suggest higher intentions to purchase from the web store. In contrast, negative feeling states such as anger and dissatisfaction induce low affective involvement and are likely to dampen consumers' desires to purchase at the web store. As such, favorable purchase intentions are generally consequential effects of high affective involvement (i.e., positive feeling states), while low purchase intentions are consequences of low affective involvement (i.e., negative feeling states). Hence, we propose a positive relationship between affective involvement and purchase intention.

H6: Affective involvement will positively influence purchase intention.

4. Research Methodology

4.1. Research Design

We conducted a laboratory experiment with a 2x2x2 factorial design to test the research model. The three independent variables are active control (high or low), reciprocal communication (present or absent), and product type (functional or expressive). Cognitive and affective involvement are measured and studied as mediating variables. Purchase intention is measured as a dependent variable.

4.2. Participants

Students are a major group of Internet shoppers (Lim et al., 2006), and their online behaviors do not differ significantly from the general population (Thakur and Summey, 2007). Recent studies further show that younger people continue to be the dominant Internet users (McGann, 2005). Hence, college students are deemed to be suitable participants for ecommerce studies. Using a medium effect size of 0.25, an a-priori power analysis suggests that 186 participants would ensure the power of 0.8 for a 2x2x2 between-subject design (Cohen, 1988). We randomly assigned the participants to one of the eight experiment treatments, each with 22 to 25 participants. Upon completion of the experiment, each participant was reimbursed with a token sum of $10.

4.3. Independent Variables

We manipulated active control at two levels (i.e., high and low) by varying the ability of users to choose and customize the information flow. Under this manipulation, participants in the high active control condition were assigned to websites in which the items were categorized and presented in a meaningful manner. Participants could make use of the hyperlinks and browse through the product categories that were indicated on the navigation bar of the website. This allowed them to interact with the website by selecting the order of information they wanted to see at each moment. In contrast, participants in the low active control condition were assigned to websites that did not include product categories, and they had to go through a randomized list of items in order to locate product information. This is analogous to viewing a print advertisement where consumers are not able to control the experience. This manipulation is consistent with the definition of active control (i.e., whether consumers are able to interact with the system to choose what they want to see). Similar manipulations for active control have been used in other studies (e.g., Ariely, 2000; Coyle and Thorson, 2001; Sicilia et al., 2005). Screenshots of the manipulation are found in the Appendix. We used four manipulation check questions (see Appendix) to gauge the manipulation success.

We manipulated reciprocal communication through two conditions: present and absent. This was made possible through the opportunities for consumers to submit product queries via a hyperlink. Participants assigned to the treatment with reciprocal communication were able to communicate with the sales representatives of the company through a live chat. By clicking on the "Contact Us Now" hyperlink available on the top right hand corner of the websites, participants could engage in real-time text communication with the sales representatives (confederates) in a virtual chat room. These confederates were briefed on their roles and responsibilities and had been trained on how to respond to the consumers' feedback and queries. The real-time text communication was simulated with an Internet Relay Chat program, mIRC (http://www.mirc.com). In addition, participants were told that it was compulsory to enter the virtual chat room and submit feedback or product queries to the sales

representatives. This manipulation is consistent with the definition of reciprocal communication (i.e., whether consumers are able to interact with sales representatives to ask questions and provide feedback). Participants in the treatment without reciprocal communication were not exposed to the "Contact Us Now" hyperlink. Screenshots of the manipulation and the manipulation check questions for reciprocal communication are found in the Appendix.

We manipulated product type at two levels: functional and expressive. We used non-fictional books to represent functional products, because the decision to purchase non-fictional books is largely logical and objective, and is based on the functional features of the book (e.g., the suitability of content, the ease of understanding its content, the credibility of the author(s), and its ability to answer readers' questions). As such, non-fictional books are consistent with the conceptual characteristics of functional products, that is, product choice is based on cognitive motive and is of a utilitarian nature (Ratchford, 1987). We used paper greeting cards to represent expressive products, as they lend themselves more to feelings (Vaughn, 1980). Aspects of design, theme, and card message are evaluated based on their sensory stimulation abilities. In purchasing greeting cards, consumers base their choice on affective motives (Ratchford, 1987). This product choice is aligned with previous marketing literature on product classification, such as the Foote, Cone and Belding (FCB) grid[4] (Vaughn, 1980; Ratchford, 1987). In addition, we chose gender neutral products to avoid bias. We also avoided recognized brand names to prevent branding effects. More importantly, these products are common online sales items, reducing unfamiliarity issues or knowledge bias among participants. We selected specific product items and attributes from Amazon.com and AmericanGreetings.com to ensure a realistic experience. Four manipulation check questions (see Table 1) were used to gauge manipulation success. Two fictional companies were created for the purpose of this study: PowerBooks and PowerGreetings. The website for each company contained only one type of product (i.e., PowerBooks sells books while PowerGreetings sells greeting cards).

4.4. Mediating Variables

Past studies have extended the involvement concept to websites (Hwang and McMillan, 2002). When consumers process content on a website, they can be in a state of involvement with the website. This study adapts the revised Personal Involvement Inventory (PII) (Zaichkowsky, 1994) to measure website involvement. Though the original scale comes from advertising research, it is still highly applicable to involvement with websites. Fundamentally, the involvement experienced in viewing advertisements is similar to the involvement experienced on websites, since the content of both advertisements and websites contains product-related information used for informing consumers. More importantly, the PII was adapted in several past studies to measure website involvement (Hwang and McMillan, 2002; Wu, 1999), suggesting its suitability for this study. Each component of involvement is measured on seven-point semantic differential scale (see Appendix).

4.5. Dependent Variable

Purchase intention is a common measure used to assess the effectiveness of eliciting response behaviors (Li et al., 2002). The most important aim of sales websites is to convert awareness to actual purchases. The method of asking participants to evaluate a website and then indicate an intention is prevalent throughout the literature. This study adapts a seven-point semantic differential scale from Li et al. (2002) (see Appendix).

4.6. Pretest

We conducted a pretest with 15 college students. The pretest ensured that the experimental procedures were well communicated and understood. It also provided an opportunity to check whether questions administered were clearly labeled and written. Furthermore, the participants' opinions, with regard to the effectiveness of the manipulation of the independent variables, were taken into consideration so that the stimulus material could be enhanced before the actual experiment

[4] The FCB grid is a classic model for classifying products based on dimensions of involvement and think/feel. See Ratchford (1987) and Vaughn (1980) for more details.

took place. From the pretest, participants viewed non-fictional books and greeting cards to be most representative of functional and expressive products, respectively. In addition, we recruited five of the participants in pre-test as confederates for the actual experiment. They were trained and briefed on their roles and responsibilities as sales representatives for the purpose of this research.

4.7. Experiment Procedures

Before the start of the experiment, we informed participants that the study was solely for academic purposes, and their responses would remain anonymous. Participants were randomly assigned to one of the eight treatment conditions. They were then provided purchasing scenarios in which they were supposed to purchase non-fictional books or greeting cards for their family and friends as a gift. They were briefed on the experiment and were given the purchasing task on a piece of paper. They were told to read and follow the instructions on the paper before viewing the website.

The instructions required the participants to look through the website and purchase books (or greeting cards). Participants were asked to indicate the item number of the book (or greeting card) on the space provided in the purchase task sheet. We used a purchasing task to elicit a goal-directed search, which should motivate participants to surf the website. Participants who were assigned to the reciprocal communication treatment underwent a real-time live chat with the confederates posing as sale agents as they performed the purchase task.

Participants took approximately 20 minutes to complete the purchase task. After they had completed the task, they administered an online questionnaire. They were then paid and debriefed. No participants make enquiries during or after the experiment, suggesting that the experiment instructions were clear, and they did not perceive any unnaturalness in the experiment.

5. Data Analysis

5.1. Control Checks

We conducted control checks to ensure that there were no significant statistical differences in age, gender, number of items purchased over the Internet in the past year, amount of money spent on the items, or total number of hours spent on the Internet in the past week across the different treatment conditions.

5.2. Manipulation Checks

We assessed the manipulation of active control using a scale adapted from Liu (2003) and McMillan and Hwang (2002). It consists of four items (see Appendix). A larger score indicates a higher active control. There was a significant difference ($t = 5.02$, $p < 0.01$) between participants under the high active control treatment (mean = 4.62, SD = 1.32, n = 92) and those under the low active control treatment (mean = 3.63, SD = 1.38, n = 94). Thus, the manipulation of active control was successful.

We assessed the manipulation of reciprocal communication using a scale adapted from Liu (2003) and McMillan and Hwang (2002). It consists of four items (see Appendix). A higher score indicates a greater extent of reciprocal communication. There was a significant difference ($t = 11.14$, $p < 0.01$) between participants in the treatment with reciprocal communication (mean = 5.14, SD = 1.31, n = 92) and those in the treatment without reciprocal communication (mean = 2.89, SD = 1.45, n = 94). Hence, the manipulation of reciprocal communication was successful.

We assessed the manipulation of product type using a scale adapted from Ratchford (1987). Participants were asked, with respect to the product type assigned, whether their purchase decision was based mainly on logical reasoning, functional facts, a lot of feelings (reverse-scored), or appearances (reverse-scored) (see Appendix). A high score implies a functional product, while a low one represents an expressive product. There was a significant difference ($t = 5.75$, $p < 0.01$) between participants who were looking at functional products (mean = 4.26, SD = 0.94, n = 94) and those who were looking at expressive products (mean = 3.55, SD = 0.75, n = 92). Therefore, the manipulation on

product type was successful.

5.3. Validity and Reliability

We conducted an exploratory factor analysis using oblimin rotation for all the questions measuring cognitive involvement, affective involvement, and purchase intentions. According to Hair et al. (1998, pp. 113), loadings of 0.40 and above are considered significant and should not have cross-loadings. Following the guideline set by Hair et al. (1998), this study assumes convergent and divergent validity at factor loadings equal to and above 0.40. All items loaded on the expected constructs except one item for cognitive involvement. After dropping this item, we conducted another factor analysis. As shown in Table 1, all the remaining items loaded onto the intended constructs.

Table 1: Results of Factor Analysis

	Factor		
	1	2	3
Purchase Intention 1	**0.84**	0.12	-0.03
Purchase Intention 2	**0.92**	0.05	-0.01
Purchase Intention 3	**0.93**	0.04	-0.05
Purchase Intention 4	**0.81**	0.15	0.27
Affective Involvement 1	-0.03	**0.85**	0.01
Affective Involvement 2	-0.01	**0.85**	-0.01
Affective Involvement 3	-0.18	**0.74**	0.00
Affective Involvement 4	0.10	**0.88**	0.08
Affective Involvement 5	-0.09	**0.46**	0.10
Cognitive Involvement 1	-0.13	0.11	**0.56**
Cognitive Involvement 2	-0.05	0.03	**-0.66**
Cognitive Involvement 4	0.02	0.24	**0.62**
Cognitive Involvement 5	0.02	-0.03	**0.83**

We assessed the constructs for reliability using Cronbach's Alpha. The Cronbach's Alpha for cognitive involvement was 0.85, affective involvement was 0.91, and purchase intention was 0.96. Since these scores exceed 0.70, these constructs have adequate reliability (Nunnally, 1978).

5.4. Descriptive Statistics

To examine the effects of interactivity on cognitive involvement and affective involvement, we conducted a multivariate ANOVA. Active control and reciprocal communication were found to have statistically significant effects ($p < 0.05$) on cognitive involvement and affective involvement. We then carried out separate univariate ANOVAs on cognitive involvement and affective involvement. The descriptive statistics for each involvement type are presented in Tables 2 and 3, respectively.

Table 2: Descriptive Statistics on Cognitive Involvement

Mean Score (SD, n)				Reciprocal Communication	
				Present	Absent
Product Type	Functional	Active Control	High	4.06 (0.70, 24)	4.36 (1.12, 23)
			Low	3.59 (1.11, 22)	3.46 (0.98, 25)
	Expressive	Active Control	High	4.58 (0.82, 22)	4.60 (0.72, 23)
			Low	3.75 (1.23, 24)	4.06 (1.22, 23)
Overall Mean Scores					
Product Type		Active Control		Reciprocal Communication	
Functional	Expressive	High	Low	Present	Absent
3.87 (1.04, 92)	4.25 (1.07, 94)	4.40 (0.10, 92)	3.72 (1.14, 94)	4.00 (1.04, 92)	4.12 (1.10, 94)

Table 3: Descriptive Statistics on Affective Involvement					
Mean Score (SD, n)				Reciprocal Communication	
				Present	Absent
Product Type	Functional	Active Control	High	3.43 (0.85, 24)	3.63 (1.21, 23)
			Low	3.20 (0.98, 22)	2.48 (1.09, 25)
	Expressive	Active Control	High	4.52 (0.99, 22)	4.09 (1.13, 23)
			Low	3.20 (1.39, 24)	3.25 (1.33, 23)
Overall Mean Scores					
Product Type		Active Control		Reciprocal Communication	
Functional	Expressive	High	Low	Present	Absent
3.77 (0.12, 92)	3.19 (0.12, 94)	3.92 (0.12, 92)	3.03 (0.12, 94)	3.59 (0.12, 92)	3.36 (0.12, 94)

5.5. Hypothesis Tests Table 3: Descriptive Statistics on Affective Involvement

Table 4 reports the results of the univariate ANOVA test on cognitive involvement. Active control has a significant main effect ($F = 21.32$, $p < 0.01$). This shows that high active control leads to higher cognitive involvement for both functional and expressive products. Therefore, H1 is supported. In addition, the results indicate that there is no interaction effect ($F = 0.08$, $p > 0.05$.) between reciprocal communication and product type. Therefore, H3 is not supported.

Table 4: Effects on Cognitive Involvement					
	SS	df	F	p	Partial Eta Squared
Active Control (AC)	21.66	1	21.32	0.01**	0.11
Reciprocal Communication (RC)	0.72	1	0.71	0.40	0.01
Product Type (PROD)	6.71	1	6.60	0.01**	0.04
AC * RC	0.05	1	0.05	0.83	0.00
AC * PROD	0.00	1	0.00	0.99	0.00
RC * PROD	0.08	1	0.08	0.78	0.00
AC * RC * PROD	1.52	1	1.50	0.22	0.01

** $p < 0.01$, * $p < 0.05$

We then conducted a univariate ANOVA test on affective involvement. As illustrated in Table 5, results of the univariate ANOVA tests show that active control has a significant main effect ($F = 28.08$, $p < 0.01$) on affective involvement. Hence, H2 is supported. In addition, results also show that there is a significant interaction effect ($F = 4.39$, $p < 0.05$) among the three independent variables. The presence of a higher-order interaction effect takes precedence over a lower order (Keppel, 1991) and demands further investigation. To understand the interaction effect between the three independent variables, we conducted a series of simple effect tests for each product type.

Table 5: Effects on Affective Involvement					
	SS	df	F	p	Partial Eta Squared
Active Control (AC)	36.20	1	28.08	0.01**	0.14
Reciprocal Communication (RC)	2.38	1	1.85	0.18	0.01
Product Type (PROD)	15.59	1	12.09	0.01**	0.07
AC * RC	0.54	1	0.42	0.52	0.00
AC * PROD	1.77	1	1.35	0.25	0.01
RC * PROD	0.54	1	0.05	0.82	0.00
AC * RC * PROD	5.66	1	4.39	0.04*	0.03

** $p < 0.01$, * $p < 0.05$

Results of the univariate ANOVA test (Table 6) show that active control has a significant main effect ($F = 10.33$ $p < 0.01$) for functional products. More importantly, there is a significant interaction effect ($F = 4.52$, $p < 0.05$) between active control and reciprocal communication. A further analysis of this interaction effect reveals that active control has a significant effect on affective involvement when reciprocal communication is absent ($t = 3.46$, $p < 0.05$) but not when reciprocal communication is present ($t = 0.87$, $p > 0.05$.). The further analysis also reveals that reciprocal communication has no significant main effect ($t = 0.63$, $p > 0.05$) under high active control but exerts a significant main effect ($t = 2.46$, $p < 0.05$) under low active control for the functional product. As such, reciprocal communication has an effect on affective involvement only under low active control for functional product websites. Though H4 is not supported by the absence of interaction between reciprocal communication and product type ($F = 0.08$, $p > 0.05$), a more interesting 3-way interaction surfaces when active control is considered.

Table 6: Effects on Affective Involvement for Functional Product

	SS	df	F	p	Partial Eta Squared
Active Control (AC)	11.15	1	10.33	0.01**	0.10
Reciprocal Communication (RC)	1.63	1	1.51	0.22	0.02
AC * RC	4.88	1	4.52	0.04*	0.05

** $p < 0.01$, * $p < 0.05$

Results shown in Table 7 indicate that active control has a significant main effect ($F = 17.72$, $p < 0.01$) on affective involvement for expressive products. Therefore, active control only has a significant impact under the following conditions: (i) functional product websites with an absence of reciprocal communication and (ii) expressive product websites.

Table 7: Effects on Affective Involvement for Expressive Product

	SS	df	F	p	Partial Eta Squared
Active Control (AC)	26.63	1	17.72	0.01**	0.17
Reciprocal Communication (RC)	0.83	1	0.55	0.47	0.01
AC * RC	1.34	1	0.89	0.35	0.01

** $p < 0.01$, * $p < 0.05$

To investigate how involvement types can impact purchase intention, we carried out a multiple regression using cognitive involvement and affective involvement as independent factors. The adjusted R-squared obtained from the linear regression is 0.55. Falk and Miller (1992) indicate that explanatory power greater than ten percent is acceptable. Hence, website involvement was able to account for a substantial amount of the variance in purchase intentions. As shown in Table 8, the standardized coefficient of cognitive involvement is 0.28 ($p < 0.01$) and that of affective involvement is 0.50 ($p < 0.01$). In addition, a correlation test indicated a positive relationship between cognitive involvement and purchase intention ($r = 0.70$, $p < 0.01$), supporting H5. A positive relationship between affective involvement and purchase intention ($r = 0.72$, $p < 0.01$) was also obtained; thus, H6 is supported. Table 9 summarizes these results.

Table 8: Multiple Regression on Purchase Intention

	Standardized Coefficients	t	p
Cognitive Involvement	0.28	3.51	0.01**
Affective Involvement	0.50	6.17	0.01**

** $p < 0.01$, * $p < 0.05$

Table 9: Summary of Hypotheses Testing	
H1	Supported
H2	Supported
H3	Not supported
H4	Not supported (Different form of interaction discovered)
H5	Supported
H6	Supported

In order to test whether or not cognitive involvement and affective involvement fully mediate the effects of active control and reciprocal communication on purchase intentions, we conducted a follow-up regression by first using active control and reciprocal communication as independent variables and purchase intentions as the dependent variable. Results show that active control has a significant effect but not reciprocal communication (Table 10). This is consistent with our findings. We then added cognitive involvement and affective involvement to the independent variable pool. The regression results show that both types of involvement are significant predictors, but neither active control nor reciprocal communication is (Table 11). This suggests that cognitive and affective involvement fully mediate the effect of active control on purchase intentions.

Table 10: Supplementary Test of Mediation Effects 1			
	Standardized Coefficients	T	p
Active Control (AC)	0.23	2.70	0.01**
Reciprocal Communication (RC)	-0.09	-0.84	0.40
Product Type (PROD)	0.15	1.24	0.22
AC x PROD	-0.06	-0.48	0.63
RC x PROD	0.14	1.11	0.27

** p < 0.01, * p < 0.05

Table 11: Supplementary Test of Mediation Effects 2			
	Standardized Coefficients	T	p
Active Control (AC)	0.04	-0.74	0.46
Reciprocal Communication (RC)	-0.13	-0.65	0.52
Product Type (PROD)	0.01	0.05	0.97
AC x PROD	-0.13	-1.47	0.15
RC x PROD	0.16	1.87	0.07
Cognitive Involvement	0.27	3.22	0.01**
Affective Involvement	0.53	6.20	0.01**

** p < 0.01, * p < 0.05

6. Discussion and Implications

6.1. Discussion

Regardless of product type, websites with high active control tend to stimulate higher cognitive involvement. Moreover, it can also lead to higher affective involvement for functional product websites when there is an absence of reciprocal communication. Results indicate that reciprocal communication does not have an impact on cognitive involvement. It can, however, heighten affective involvement in situations where there is low active control on functional product websites. In addition, our results demonstrate that there is a positive causal relationship between cognitive and affective involvement, and purchase intention. Hence, to increase purchase intention, it is imperative that we understand how interactivity affects different types of website involvement.

There are two possible reasons for the absence of an interaction between product type and reciprocal communication on cognitive involvement. First, the participants may have obtained most of the information needed to make a purchase decision from the pictures and descriptions given on the

webpage, leading them to perceive few benefits and little relevance in taking part in reciprocal communication with the sales representatives. The second reason is that the products used in the experiment are relatively simple: books and greeting cards have few features and are not complicated (Vaughn, 1980). As a result, participants require little information to make their purchase decisions. In these cases, occurrences of information conveyance may have been minimal. This also implies that little cognitive effort is exercised during the purchase, leading to insignificant differences in cognitive involvement between functional and expressive products. Participants may rely more heavily on sales representatives for information when they are searching for more complicated functional products (e.g., laptops) or when the website is inadequate in meeting the information needs. This may then lead to a higher likelihood of objective information exchange, resulting in higher cognitive involvement.

While cognitive involvement remains an important factor in determining purchase intention, the affective aspect of website involvement cannot be ignored. In fact, it is seen from our study results that the effect of affective involvement on purchase intention is nearly double that of cognitive involvement (Table 8). This reinforces the research by Vakratsas and Ambler (1999), which suggests that affective aspects may be more important in making purchase decisions. Our study results indicate that affective involvement is an important construct and acts as an antecedent to purchase intention. Thus, an understanding of how interactivity type can influence affective involvement will be critical. Instead of the predicted 2-way interaction between reciprocal communication and product type, we found a 3-way interaction, we found that for websites that feature functional products, active control and reciprocal communication exert a significant main effect on affective involvement only in the absence of each other. Websites with either a high level of active control or a reciprocal communication feature, or both evoke almost the same amount of affective involvement.

Several possible reasons may explain this 3-way interaction. Liu and Shrum (2002) note that there are aspects of a situation that may circumscribe the effects of interactivity. The nature of functional products implies a utilitarian and problem solving approach and, thus, users will most likely seek information in the most salient manner. As such, the ability to engage in reciprocal communication may not be as attractive when there are alternative methods by which information can be derived more easily. This could explain why reciprocal communication was deemed to be less relevant to participants who were given high active control to streamline product information on the website. In contrast, participants who are deprived of active control in searching for functional products would find the information gathering process tedious. In this case, reciprocal communication plays a more pertinent role by overcoming the difficulties in information flow customization and may aid in alleviating negative emotions.

6.2. Implications for Research

Theoretical implications of this study are threefold: (i) identification of the dual channels of website interactivity, (ii) enhancement of the theoretical foundations of website interactivity, and (iii) examination of website involvement and explanation of its impacts. First, though various studies have examined the concept of interactivity in the past, little effort has been made to reconcile the various conceptualizations and to identify the most critical components of interactivity on websites. By spotting the similarities in interactivity literature and the immediate concerns of interactivity design in practice, this study goes beyond prior interactivity studies by identifying the dual channels of website interactivity, namely, mechanical and social interactivity. This study has further fine-tuned the abstract definition of mechanical and social interactivity by demonstrating how active control and reciprocal communication are representations of each channel of interactivity, respectively, in practice. The study results have also explicitly shown that the two identified facets of interactivity are distinct and have varying impacts on consumers.

Second, this study has enhanced the tenets of website interactivity by providing theoretical explanations to explicate its impacts. By demonstrating that active control increases cognitive and affective involvement, the study results have shown support for the tenet stating that interactivity features can enhance consumers' online shopping experience. More specifically, the results suggest

that active control can induce consumers to be acutely absorbed and involved in their navigation of websites. The theoretical implication drawn from the current interactivity study parallels the findings in flow research, which contend that control leads to the flow experience – a state of total involvement (Ghani et al., 1991). Our finding acts as a bridge between the research area of interactivity and that of flow by reconciling tenets from both areas.

The study has also contributed toward the literature of reciprocal communications. Our results suggest that the principles of interactivity (Burgoon et al., 2002) cannot be applied directly when reciprocal communication co-exists with other interacting variables. Specifically, reciprocal communication is observed to be beneficial only where the mechanical interactions with a website are ineffective in deriving information. This finding is analogous to the social presence theories developed in the last three decades, which assert that situational circumstances affect outcomes of social presence (Carlson and Davis, 1998). In high equivocality tasks (e.g., shopping on websites with low active control), consumers may find social presence via reciprocal communication to be beneficial. Conversely, reciprocal communication may be considered redundant and inefficient when the shopping task is of low equivocality (i.e., high active control present) (Schmitz and Fulk, 1991). The 3-way interaction in our results attests to this theoretical claim. Thus, our study suggests a possible linkage between reciprocal communication and social presence theory. Future research should examine the theoretical underpinnings between reciprocal communication and social presence in greater depth.

Third, this research examined the website involvement construct by studying effects from its antecedents and its effects on purchase intention. In particular, results illustrate that active control can lead to both cognitive involvement and affective involvement concurrently. This replicates the finding of prior research that cognitive involvement and affective involvement are independent constructs and can co-exist (Kim and Lord, 1991; Putrevu and Lord, 1994). Additionally, both types of involvement are significant predictors of purchase intention, though affective involvement is shown to play a larger role than cognitive involvement. This relationship highlights two important issues to IS researchers: (i) more effort should be placed on examining the role of website involvement in consumer decision making, an area which has been understudied, and (ii) website involvement should be studied more intricately by separating out the cognitive and affective components, as these have distinct impacts on consumer behavior.

6.3. Implications for Practice

Ecommerce practitioners have long been concerned about the design issues of webstores. Despite the advice given by various studies, problems in webstore design continue to linger in practice, as exemplified by a recent case that reports criticism of the River Island website design. River Island is a well-known high street clothing retailer.[5] In response to the criticism, River Island made a public apology and pledged to revamp its website to eliminate the accessibility issues present in its current design. Such recurring problems in practice are presumably due to the fact that few extant studies have attempted to point out how specific aspects of interactivity may impact the success of ecommerce websites. Practitioners desperately need this advice to alleviate their woes in the design of interactive web features. This study addresses this concern by providing detailed design insight on website interactivity. In particular, two key implications for and contributions to practice emerge from our findings discussed above.

First, important managerial insights are embedded in the unique interaction effects found among active control, reciprocal communication, and product type. Online retailers dealing with expressive products such as perfumes, sports cars, or greeting cards should concentrate on incorporating features of active control into their websites in order to enhance the website involvement of their customers. Active control on ecommerce sites can be implemented via website navigation features (e.g., product search, site map) or virtual product control (Jiang and Benbasat, 2004). As for functional products (e.g., cameras, reference books), our study results suggest that the use of active

[5] "River Island holds pitch for site revamp", New Media Age (19 April, 2007), p. 3

control features does not improve website involvement under situations where reciprocal communication (i.e., live chat functionality) is present, while the opposite holds when reciprocal communication is absent. Practitioners should note the contention of effects between active control and reciprocal communication. Given tight IT budgets, managers should consider deploying only the interactive feature that is most critical for its business needs. For instance, a web store featuring many disparate types of electronic products (e.g., www.jr.com) would tend to benefit more from an infrastructure of well-developed navigation aids over live chat functionality, since high active control is needed to facilitate the locating of merchandise on the website. In contrast, live chat may provide more benefits than interactive control features for websites that sell highly customized functional products, since communication with the customers facilitates the process of product customization.

Second, the result demonstrating that website involvement fully mediates the relationship between active control and purchase intention underscores the crucial role played by cognitive and affective involvement in the success of ecommerce sites. It is imperative for practitioners to understand that interactive features should be implemented with the direct aim of enhancing consumers' website involvement. Having the perspective of improving website involvement would allow online retailers to be more successful in eliciting positive results in the design of ecommerce sites. Furthermore, practitioners should be aware that the positive effect of affective involvement is of a larger magnitude compared to that of cognitive involvement. This means that ecommerce site designers could put more emphasis on incorporating interactive features that enhance consumers' affective involvement with the website.

6.4. Limitations and Future Research

A limitation of this study is that we only consider two product categories: non-fictional books and greeting cards. These products are generally considered to be familiar to the average consumer and require little product knowledge in making a purchase decision. Different results may have been obtained with products such as wine, diamonds, or expensive dresses, which require gaining extensive product knowledge before arriving at a purchase decision. At the same time, products examined in this study are generally considered to be low involvement products, since they are not costly and have few product features. However, it is beyond the ability of this study to consider several product taxonomies simultaneously within a single effort. Subsequent studies should consider the effects of product knowledge and product involvement when replicating the study in order to generalize the findings. Another potential limitation of the study arises from the lack of power. The analysis revealed that effect sizes are small for the study constructs. Hence, conducting the a-priori power analysis using a conservative medium effect size would result in an underestimation of the number of participants needed. This suggests that future research on website interactivity should consider using a larger number of participants, so that effects from the constructs can be better observed.

While this research has explored how differences in the level of interactivity through active control and reciprocal communication can affect website involvement, future research should investigate how other types of interactivity can affect website involvement. For instance, interactivity executed through richer forms of reciprocal communication (e.g., video chat) can be studied. Also, the differential effects of using Flash versus Hypertext as platforms for providing active control can be explored. These research topics help academics to comprehend the effects brought by interactive web features operationalized by new and popular technologies.

7. Conclusion

While many prior studies on interactivity examined the effects of information control (e.g., Ariely, 2000;Coyle and Thorson, 2001; Sicilia et al., 2006) in a mechanical interaction context, this study has gone beyond these studies by simultaneously considering social interaction. Reciprocal communication did not have a main effect on cognitive involvement. However, functional product websites that also employ reciprocal communication can lead to high affective involvement when there is low active control. This illustrates that while mechanical and social interaction remain as two disparate aspects of interactivity, both can interact and exert an influence on website involvement.

Differences in product type affect the type of information solicited by consumers (Dahlen et al. 2003) and, thus, influence how consumers make use of websites to obtain information. High active control can lead to high affective involvement for expressive product websites but not for functional product websites with reciprocal communication. Although prior research has highlighted that involvement is one of the most predictive variable of advertising effectiveness, this research has explicitly illustrated that, while cognitive involvement remains important, affective involvement should not be ignored.

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Appendix

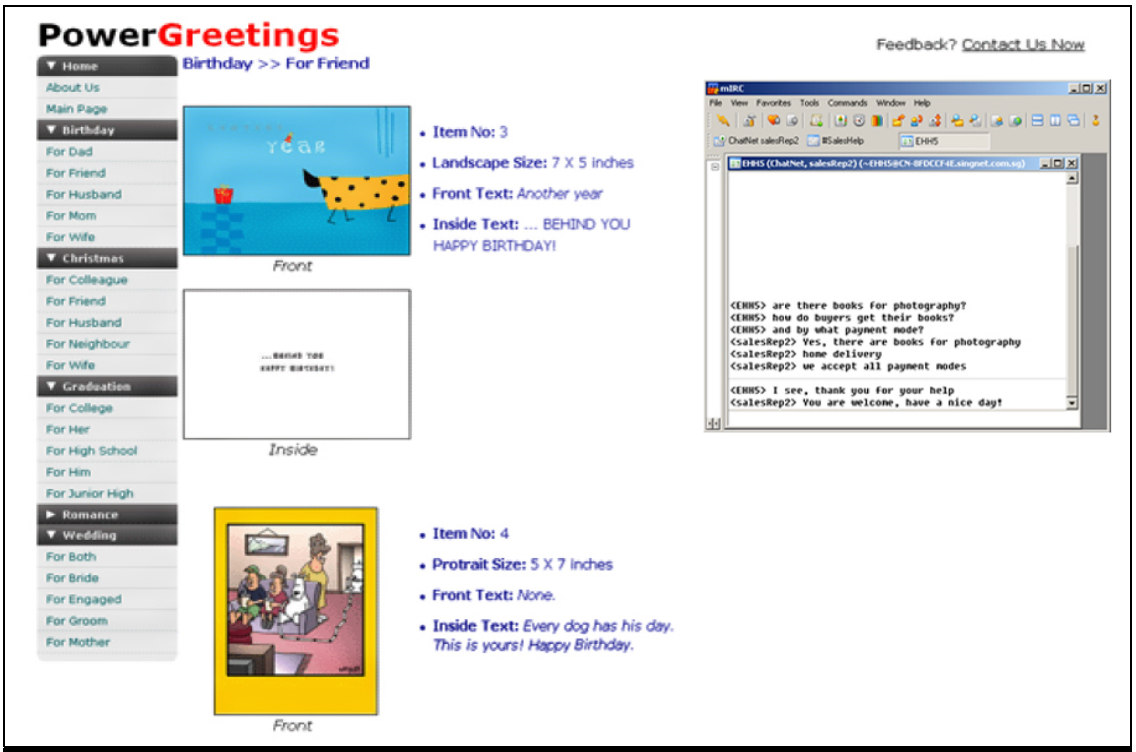

Figure A1: High Active Control with Reciprocal Communication (Paper Greeting Card)

Figure A2: High Active Control without Reciprocal Communication (Paper Greeting Card)

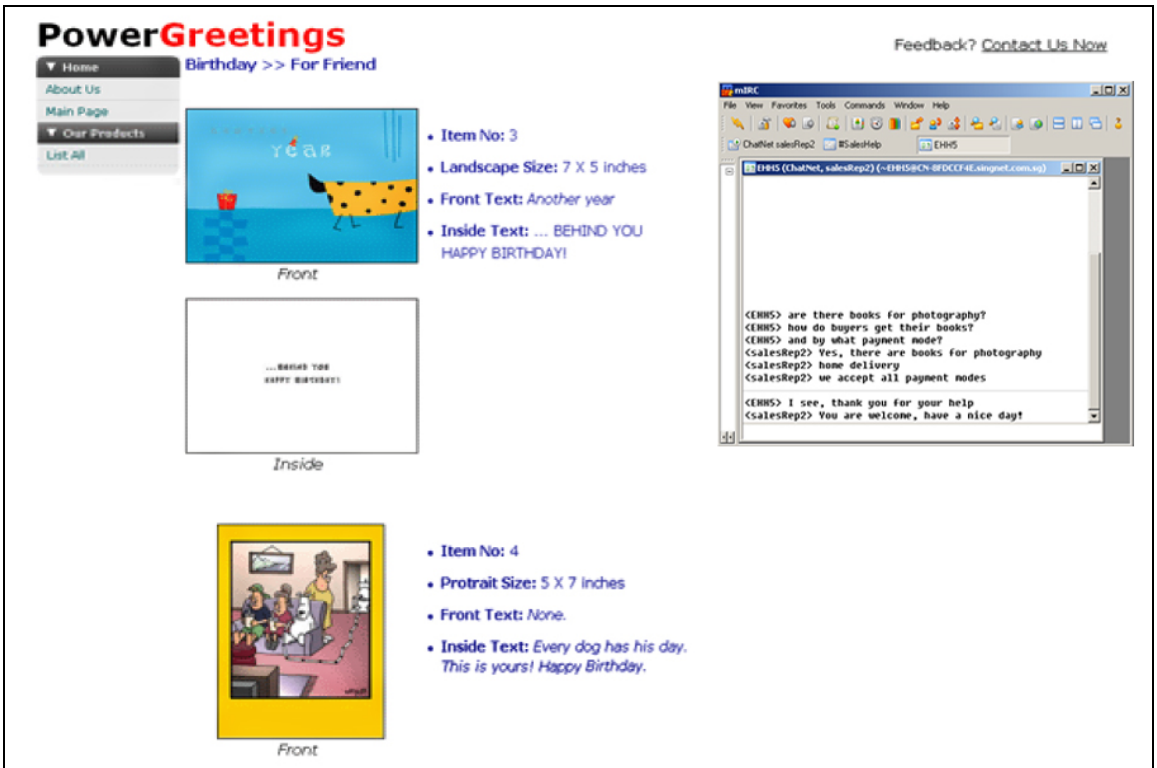

Figure A3: Low Active Control with Reciprocal Communication (Paper greeting card)

Figure A4: Low Active Control without Reciprocal Communication (Paper greeting card)

Appendix Table: Questions for Measuring Constructs

Manipulation Check	
Level of Active Control (Liu, 2003) (McMillan and Hwang, 2002)	Seven-point Likert Scale: Strongly Disagree (1) to Strongly Agree (7) 1. I felt that I had a lot of control over my visiting experiences at this website. 2. While I was on the website, I could choose freely what I wanted to see. 3. While surfing the website, I had control over what I can do on the site. 4. While surfing the website, my actions decided the kind of experiences I get.
Reciprocal Communication (Liu, 2003) (McMillan and Hwang, 2002)	Seven-point Likert Scale: Strongly Disagree (1) to Strongly Agree (7) 1. This website is effective in gathering visitor's feedback. 2. This website makes me feel like it wants to listen to its visitors. 3. This website encourages visitors to offer feedback. 4. This website gives visitors the opportunity to talk back.
Product Type (Ratchford, 1987)	Seven-point Likert Scale: Strongly Disagree (1) to Strongly Agree (7) With respect to the product type seen on the website, purchase decision will be based mainly on: 1. logical reasoning 2. functional facts 3. a lot of feelings 4. appearances
Measured Variables	
Cognitive Involvement (Zaichkowsky, 1994)	Seven-point Semantic Differential Scale This website is: 1. unimportant (1) / important (7) 2. irrelevant (1) / relevant (7) 3. means nothing (1) / means a lot (7) 4. worthless (1) / valuable (7) 5. not needed (1) / needed (7)
Affective Involvement (Zaichkowsky, 1994)	Seven-point Semantic Differential Scale This website is: 1. boring (1) / interesting (7) 2. unexciting (1) / exciting (7) 3. unappealing (1) / appealing (7) 4. mundane (1) / fascinating (7) 5. uninvolving (1) / involving (7)
Purchase Intention (Li et al., 2002)	Seven-point Semantic Differential Scale How likely/probable/certain/definite are you going to buy a product from this website: 1. unlikely (1) / likely (7) 2. improbable (1) / probably (7) 3. uncertain (1) / certain (7) 4. definitely not (1) / definitely (7)

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Journal of the Association for Information Systems

ISSN: 1536-9323